

Hanchevskiy Vl., Beznis Y.

Microprocessors and Server CPU Development in Russia

Belarusian National Technical University
Minsk, Belarus

The need for reliable microprocessors based on professionally developed CPU is steadily increasing. Several companies are engaged in the development and design of microprocessors in the Russian Federation, such as MCST, Baikal Electronics, NPC Elvis and STC Module. These companies produce solutions that differ both in architecture and purpose.

The Russian Federation is one of the few countries in the world that has the opportunity to boast of advanced personal designed microprocessors. This is a rather grandiose achievement, because processors are primarily used as a strategically necessary product for military and space needs. They represent the variants of microprocessors that cannot be easily and freely purchased on the free market. And only then they are used for personal computers, servers, and so on.

Experts distinguish between the architecture of a microprocessor and the microarchitecture of a microprocessor. The architecture of a microprocessor is the command system it supports. The architecture of microprocessors is fundamental for software developers: it depends on the architecture and defines which programs will be compatible with this microprocessor. The microarchitecture of a microprocessor is the internal circuit of a microprocessor device in the form the creators of microprocessors contemplate it [1].

Licensed processor cores. The Russians themselves assemble the cores purchased at the stage on a chip, add their

own spare blocks. The software developed after the stage is more or less guaranteed to work. The microprocessor can be used to promote Russian hardware blocks by stage (for example, a video processing unit). According to a similar scheme, Baikal (MIPS and ARM64), Milander (ARM), Module (ARM), partly ELVIS (MIPS and ARM) are made.

The most top-end solutions of Russian processors can be considered Elbrus-16c and Baikal-S. Baikal-S is considered to be the first general purpose CPU that exhibits high performance. It shows good competitiveness taking into account price, performance, power consumption. It is an excellent chip, capable of competing with rivals, with a clear market niche and prospects. Baikal-S is called a universal workforce that is able to replace hundreds of thousands and millions of Intel Xeon-level microprocessors currently working on servers and enterprises throughout the Russian Federation. The approximate cost of Baikal-S is \$ 3,000, and for these funds it offers an ARMv8 architecture, 48 Cortex-A75 cores, a core frequency of 2-2.5 GHz, a 16nm process technology and a heat dissipation of 120 watts. We tend to think that this is a pretty good microprocessor that can replace processors such as Intel Xeon and Amd Epyc [2].

References:

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